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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/406,837	09/28/1999	NABIL N. SEDDIGH	T8465054US	1987

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EXAMINER
MEHRA, INDER P

ART UNIT	PAPER NUMBER
2666	

DATE MAILED: 11/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

	Application No.	Applicant(s)
Office Action Summary	09/406,837	SEDDIGH ET AL.
	Examiner	Art Unit
	Inder P Mehra	2666

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-17 and 19-23* is/are rejected.

7)☒ Claim(s) *6,18 and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____ .

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .

4)☐ Interview Summary (PTO-413) Paper No(s). _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: .

DETAILED ACTION

Specification

1.   The disclosure is objected to because of the following informalities:

a. Refer to following pages and errors therein:

- Page 12 line 19, "receiver 15" should be "receiver 17".

- Page 13 line 6, "router 19" should be "router 18".

- Page 13, line 21,"can not" written twice.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3.   Claims 1-2, 4-5, 9-11, 15-16 and 22 are rejected under 35 U.S.C. 103(a) as being

unpatentable over **Sen et al** (US Patent No. 6,208,620), hereinafter Sen.

Regarding claims 1, 4, 5, 11, 15, and 22 Sen discloses electronic communication system

(data communication network), refer to col. 1, lines 5-6 and col. 3 lines 29-30; TCP header, refer

to fig. 1B, including sequence number of TCP data packets (data transmitted as sequence of data

packets, as recited in claims 11 and 22), refer to col. 5 lines 42-50; congestion control and error

recovery (method for error recovery and congestion control, as recited in claims 11 and 22), refer

to col. 5 lines 59-60; comprising the steps of :

- mobile station 201 transmits packet to Fixed Head 207 (transmitting data packets from transmitter to receiver) , refer to fig. 2, and col. 6 lines 11-24; resetting a window field to a value which signals congestion---stop transmitting (establishing a link between a transmitter and a receiver---- congestion window set to initial length) , refer to col. 11 lines 65-67; storing an original value of the window field (initial value), refer to col. 12 lines 3-4;

- receiver informing the transmitter about packet not received (missing packets) and sending NAKs to the source(detecting a missing packet at the receiver and sending NACK, as recited in claims 1, 11 and 22), refer to col. 4 lines 59-64;

- caching and re-transmitting TCP packets , refer to col. 6 line 46;

- quenching or adjusting or reducing the TCP source window to (decreasing the length of the congestion window in response to the negative acknowledgment, as recited by claims 1, 15 and 22), refer to col. 6 lines 48-49 and col. 10 lines 60-63;

- timers are set for sending NACKs to the source (setting a missing packet timer at the receiver upon sending the negative acknowledgment, as recited in claim 11), refer to col. 4 lines 64-65;

- the missing packet is not received at the receiver in response to the negative acknowledgment before expiry of the missing-packet timer, sending a further negative acknowledgment, as recited by claim 15, refer to col. 5 lines 1-3;

- setting a round-trip timer at the transmitter upon sending the packet as recited

in claims 4, 15 and 22, refer to col. 7 lines 54-56;

- increase the round trip delay (congestion window) (increasing the congestion

window if no NACK is received before the expiry of the round-trip timer, as

recited in claims 5 and 15), refer to col. 8 lines 17-32.

Regarding claims 2, 9 and 13, Sen discloses Radio link protocol (RLP) sends three

NACKs and continues until N attempts have been made (up to four ---NACKS are sent), refer to

col. 5 lines 4-5.

Regarding claim 10, Sen discloses, in reference to fig. 2, internet 205 connected to end

system Fixed Head 207 (FH 207) and data network gateway (DNG 204 (data communication

network in an internet), refer to col. 6 lines 25-27.

Regarding claim 16, Sen discloses determining round-trip time empirically, refer to col. 7

limes 50-67 through col. 8 lines 1-3.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Sen et al** (US

Patent No. 6,208,620), hereinafter Sen in view of **Nakayashiki et al** (US Patent No. 5,912,903),

hereinafter Nakayashiki.

Regarding claim 3, Sen does not disclose expressly congestion window is halved;

Nakayashiki discloses congestion window is halved , refer to col. 8 lines 45-46.

A person of ordinary skill in the art would have been motivated to employ Nakashiki's

system into Sen's TCP-aware agent sub layer (TAS) for robust TCP over wireless system in

order to control the flow of data by adjusting congestion window. The suggestion/motivation to

do so would have been to control the flow of data to enhance the efficiency of communication

protocol. It would have been obvious to a person of ordinary skill in the art to decrease the flow

of data by decreasing the size of the sliding window.

5.   Claim 7 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sen et al**

(US Patent No. 6,208,620), hereinafter Sen in view of **Chuah et al** (US Patent No. 6,400,7220,

hereinafter, Chuah.

Regarding claims 7 and 20, Sen does not disclose expressly "keep-alive" request to

receiver, where upon a re-transmission time-out timer is set;

Chuah discloses "keep-alive" mechanism (keep-alive request) between end systems ,

refer to col. 23 line 25-26; provide re-transmission flow control services (time-out timer set),

refer to col. 23 lines 29-30.

A person of ordinary skill in the art would have been motivated to employ Chuah's

optimum routing system into Sen's TCP-aware agent sub layer (TAS) for robust TCP over

wireless system in order to monitor link connectivity between systems. The suggestion/

motivation to do so would have been to control the flow of data by re-transmission. It would

have been obvious to a person of ordinary skill in the art to maintain connectivity of systems and

ensure data flow by setting re-transmission time-out timer.

6.   Claim 8 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sen et al**

(US Patent No. 6,208,620), hereinafter Sen in view of **Chuah et al** (US Patent No. 6,400,7220,

hereinafter, Chuah; and further in view of **Jorgrnsen et al** (US Patent No. 6,452,915), herein

after, Jorgensen.

Regarding claims 8 and 21, Sen in view of Chuah does not disclose the transmitter

determines if an acknowledgment to the keep-alive request is not received before expiry of the

re-transmission time-out timer, whereupon the transmitter backs-off for a predetermined period;

Jorgensen discloses a loss or time-out of the packet-receipt acknowledgment message

(the transmitter determines if an acknowledgment to the keep-alive request is not received before

expiry of the re-transmission time-out timer), refer to col. 17 and lines 42-46; further discloses

TCP can back-off, refer to col. 17 line 46, which can continue for some time, refer to col. 18

lines 28-31.

A person of ordinary skill in the art would have been motivated to employ Jorgensen's

IP-flow classification system and Chuah's optimum routing system into Sen's TCP-aware agent

sub layer (TAS) for robust TCP over wireless system in order to monitor link connectivity

between systems. The suggestion/ motivation to do so would have been to control the flow of

data by re-transmission. It would have been obvious to a person of ordinary skill in the art to

maintain connectivity of systems and ensure data flow by setting re-transmission time-out timer.

7.   Regarding claim 23, Sen discloses Nack based protocol, refer to col. 4 line 59, under

which Nacks are sent for missed frame for which timers are set for that frame, refer to col. 4

lines 62-65;

Sen does not disclose whether timer is located at the receiver, but it is obvious that these

timers are at receiver because receiver sends NACks upon not receiving the frame for which

timers are set.

8.   Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sen et

al** (US Patent No. 6,208,620), hereinafter Sen in view **Hamilton et al** (US Patent No.

6,392,993), hereinafter, Hamilton.

Regarding claims 12 and 14 Sen discloses sequence number corresponding to lost packet,

refer to col. 6 lines 56-67 through col. 7 lines 1-3;

Sen does not disclose expressly the following limitations:

- wherein missing packet is detected according to a gap in the sequence

  numbers of the stream of data packets, as recited in claim 12;

- missing packet timer is cleared upon receipt of the missing packet at the

  receiver, as recited in claim 14;

Hamilton discloses the above limitations, as follows:

-a gap in the packet sequence by the receipt of non-sequential packet

sequence number (missing packet is detected according to a gap in sequence numbers of the

stream of data packets), refer to col. 19 and lines 57-58; and further

- a packet received within designated time and the timer value being reset (the missing

packet is cleared upon receipt of the missing packet at the receiver), refer to col. 24 lines 32-33.

A person of ordinary skill in the art would have been motivated to employ Hamilton's

network into Sen's TCP-aware agent sub layer (TAS) for robust TCP over wireless system in

order to use timers and sequence numbers. The suggestion/motivation to do so would have been

to use sequence numbers to ensure continuity of data packets. It would have been obvious to a

person of ordinary skill in the art to use timers and sequence numbers to achieve statistically

reliable transmission between sender and receiver.

9.   Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Sen et al** (US

Patent No. 6,208,620), hereinafter Sen in view **Dudley et al** (US Patent No.5,754,754),

hereinafter, Dudley.

Regarding claim 17, Sen discloses round-trip time update, refer to col. 7 lines 50-67

through col. 8 lines 1-44;

Sen does not disclose expressly round-trip time update request to receiver:

Dudley discloses round-trip time update request to receiver, refer to col. 9 lines 22-36.

A person of ordinary skill in the art would have been motivated to Dudley's error

recovery system into Sen's TCP-aware agent sub layer (TAS) for robust TCP over wireless

system in order to request receiver for round-trip time update. The suggestion/motivation to do

so would have been to provide receiver the mechanism to promote continuous transmission. It

would have been obvious to a person of ordinary skill in the art to provide receiver with means to

provide status packet to sender in order to prevent interruption of transmission of data.

10.   Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Sen et al** (US

Patent No. 6,208,620), hereinafter Sen in view **Jorgensen** (US Patent No. 6,452,915).

Regarding claim 19, Sen discloses an increase in the RTD by sufficient tick, refer to col.

8 lines 30-31;

Sen does not disclose expressly increase in congestion window multicatively;

Jorgensen discloses increasing continuously transmit window if no packets were lost

within last round-trip time (RTT), refer to col. 45 lines 22-24.

A person of ordinary skill in the art would have been motivated to employ Jorgenson's

IP-flow classification system into Sen's TCP-aware agent sub layer (TAS) for robust TCP over

wireless system in order to control flow of data by adjusting congestion window. The

suggestion/motivation to do so would have been to increase the use of bandwidth and also round-

trip time. It would have been obvious to a person of ordinary skill in the art to increase the

congestion window to provide more efficient use of bandwidth.

Allowable Subject Matter

11.   Claims 6,18, and 24 are objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the base

claim and any intervening claims.

Prior Art

12.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

- Park et al (US Patent No. 5,386,412) discloses telecommunication system

  protocol for asynchronous data commission between multiport switch control

  procdessor and information support personal computer terminal.

- Drotter et al (US Patent No. 6,181,704) discloses method and apparatus for

  input/output link re-try, failure and recovery in computer network.

- Rasanen (US Patent No. 6,118,834) discloses rate adaptation in a non-uniform

  non-transparent data channel.

Conclusion

13.   Any enquiry concerning this communication should be directed to Inder Mehra whose

telephone number is (703) 305-1985. The examiner can be normally reached on Monday through

Friday from 8:30AM to 5:00 PM.

If attempt to reach the examiner by telephone is unsuccessful, the examiner's supervisor, Seema

Rao , can be reached on (703) 308-5463. Any enquiry of a general nature of relating to the status

of this application or processing should be directed to the group receptionist whose telephone

number is (703) 305-4700.

14.   Any response to this action should be mailed to:

        Commissioner of Patents and Trademarks

Washington, DC. 20231

Or faxed to (703) 872-9314.

Hand –delivered responses should be brought to Crystal Park II, 2121 Crystal drive,

Arlington, VA, sixth floor (Receptionist).

Inder Mehra 11/11/02
Inder Mehra

November 11, 2002

MELVIN MARCELO
PRIMARY EXAMINER

Attachment for PTO-948 (Rev. 03/01, or earlier)
6/18/01

The below text replaces the pre-printed text under the heading, "Information on How to Effect Drawing Changes," on the back of the PTO-948 (Rev. 03/01, or earlier) form.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

1. Correction of Informalities -- 37 CFR 1.85

New corrected drawings must be filed with the changes incorporated therein Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and centered within the top margin. If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings MUST be filed within the THREE MONTH shortened statutory period set for reply in the Notice of Allowability. Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136(a) or (b) for filing the corrected drawings after the mailing of a Notice of Allowability. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

2. Corrections other than Informalities Noted by Draftsperson on form PTO-948.

All changes to the drawings, other than informalities noted by the Draftsperson, MUST be made in the same manner as above except that, normally, a highlighted (preferably red ink) sketch of the changes to be incorporated into the new drawings MUST be approved by the examiner before the application will be allowed. No changes will be permitted to be made, other than correction of informalities, unless the examiner has approved the proposed changes

Timing of Corrections

Applicant is required to submit the drawing corrections <u>within the time period set in the attached Office communication</u>. See 37 CFR 1.85(a).

Failure to take corrective action within the set period will result in ABANDONMENT of the application

06/01/01